



EM-22.1

Category: Loan Portfolio Management

Topic: Portfolio Planning & Analysis

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Overview

Portfolio planning and analysis are key components of an institution's overall business planning process and are essential for effective loan portfolio management (LPM). This module provides guidance on examining portfolio planning and analysis processes. It also includes direction on examining credit-related management information systems and loan portfolio stress testing, which are key components of the portfolio analysis process.

The portfolio planning process provides the board and management a mechanism for defining and communicating their expectations for the loan portfolio. The portfolio plan should identify portfolio goals and objectives and establish a framework to achieve plan objectives through the direction and control of lending operations.

Portfolio analysis provides an early detection system to determine if portfolio management processes are achieving desired results. It includes necessary reporting to keep management and the board apprised of current risk levels. A sound credit-related management information system is also a critical component for ensuring reliable and effective risk analysis and reporting.

Another important component of portfolio planning and analysis is loan portfolio stress testing. Portfolio stress testing plays a critical role in planning by providing a forward-looking assessment of risk, which assists in establishing the institution's risk appetite and risk mitigation plans. When done effectively, stress testing is also a means for obtaining a better understanding of an institution's risk profile and provides valuable information for use in key portfolio management decisions. *(Note: The examination guidance in this section is focused on loan portfolio stress testing. Guidance for stress testing in other areas of operations (e.g., investments, interest rate risk, liquidity, capital, etc.) is addressed within those respective Examination Manual topics. Integration of institution-wide stress testing efforts is considered as part of enterprise risk management within the Corporate Governance topic.)*

Refer to the Agency's [LPM Publication](#) and the [OCC Handbook - LPM Booklet](#) for additional background and information on portfolio planning and analysis. In addition, the following items provide guidance on stress testing:

- FCA Informational Memorandums:
 - March 4, 2010 - [FCA's Stress Testing Expectations for All FCS Institutions](#)
 - June 17, 2002 - [Computer-Based Model Validation Expectations](#)
- [Stress Testing Best Practices as of August 23, 2010](#)
- [Stress Testing Frequently Asked Questions \(FAQs\)](#)
- [Basel Stress Testing Paper](#) - "Principles for sound stress testing practices and supervision"

Examination Procedures and Guidance

General

1. Planning & Strategies:

Evaluate the institution's credit culture, sufficiency of portfolio planning, and related human capital management considerations.

Guidance:

Portfolio planning is a key component of the business planning process and is an essential part of effective portfolio management. Generally, portfolio planning involves two key concepts: "What kind of portfolio is the institution trying to build?" and "How is it going to get there?" Accordingly, the business plan should include portfolio goals and objectives consistent with the board's risk tolerance and the local lending environment, and establish a framework and strategies to achieve them. Achieving planned goals and objectives should result in a financially stable institution that is able to serve the needs of its market area and customer base into the future.

When evaluating portfolio planning and strategies, it is important to understand the institution's credit culture, portfolio planning process, and organizational structure and staffing related to the credit delivery function. Each of these components, which are outlined below, contributes to appropriate and cohesive portfolio management planning that is consistent with the institution's risk profile and appetite.

Examiners should be mindful that institutions may perform and document the results of portfolio planning in different ways. This may include having separate credit and marketing plans, or addressing these components directly within the overall business plan. This procedure focuses on the portfolio planning process and factors considered by the institution in developing its plans. The appropriateness of specific portfolio targets should be evaluated primarily when examining the respective topical area (e.g., Loan Underwriting, Managing Risk Concentrations, etc.).

Credit Culture: An institution's credit culture is the unique combination of written and unwritten policies, practices, experiences, and attitudes that define and establish acceptable lending behavior. An institution's credit culture impacts all aspects of its operations and its portfolio management practices in particular. The institution's culture, risk profile, and credit strategies and practices should be linked and reinforce each other. Defining the credit culture begins with the board's planning process and is implemented through board and management direction, monitoring, and control of lending operations. Success is achieved by effectively communicating and implementing direction through plans, policies, procedures, and underwriting guidance.

Credit cultures can vary considerably between institutions. Some approach credit very conservatively, lending primarily to financially strong, well-established borrowers. Growth-oriented institutions may approach lending more aggressively, lending to borrowers who pose higher repayment risk. The competitive environment in the institution's local service area also influences the culture and approach to lending. Cultural differences are often grounded in an institution's objectives for asset quality, growth, and earnings. Emphasizing one of these objectives over another does not, in and of itself, preclude satisfactory performance in all three. However, the emphasis will influence how lending activities are conducted and may prompt the need for enhancements to risk controls. For example, an institution driven to achieve aggressive growth targets will generally

require more detailed credit direction and stronger controls to manage credit risk properly.

The following evaluative questions and issues to consider can help examiners gain an understanding of the credit culture to ensure it is consistent with the institution's risk appetite and planning strategies:

- **How clearly has the institution defined its credit culture and incorporated it within its mission statement, business plan goals and objectives, and policies and procedures?** These items, as well as the institution's overall risk profile and appetite, should be consistent with the defined culture.
- **Is the actual credit culture, as observed through the institution's credit practices, consistent with the stated culture?** If not, determine the cause for the difference (e.g., a lack of communication, management's indifference toward the stated culture, internal reporting structures, a performance management system that rewards behaviors that are inconsistent with the stated credit culture, etc.). Achieving consistency between the stated and actual culture can be especially challenging after a merger, and thus warrants specific examination consideration.
- **Are the stated credit culture and periodic cultural adjustments communicated to lending staff in a consistent and effective manner?**
- **Does management periodically evaluate staff's understanding of and conformance with the stated credit culture and related policies? Is there sufficient related reporting to the board?**
- **Do management and the board periodically evaluate the appropriateness of the credit culture and adjust it, as needed?**

The following resource provides a good discussion on credit culture – what it is and how it impacts portfolio planning and management: [OCC Handbook - LPM Booklet](#) (p. 11-13).

Portfolio Planning: When developing a portfolio plan, the board and management should evaluate the institution's operating environment and risks, and identify measureable goals, objectives, and strategies to guide the portfolio and achieve desired results. The institution's risk profile, risk appetite, and marketplace conditions should be considered when identifying quantifiable goals for four basic portfolio objectives: (1) portfolio quality; (2) portfolio composition; (3) loan growth; and (4) profitability. Collectively, these goals describe the type of portfolio that the board and management want to build or maintain. The institution should then identify strategies for achieving these goals and objectives.

Evaluative questions and items to consider when examining an institution's portfolio planning processes include:

- **Has the board clearly communicated credit goals and objectives, credit philosophy, and portfolio quality expectations? Are the goals and objectives reasonable and achievable?**
- **Do credit planning documents provide a reasonable assessment of portfolio conditions and risks, and a realistic outlook for future portfolio performance?** Portfolio strategies should be developed to address any significant potential or emerging risks.

- **Are growth initiatives and projected changes in portfolio characteristics reasonable and consistent with credit quality goals and objectives?** Changes in portfolio characteristics derived from growth in new lending programs or products require significant planning and careful oversight. This is necessary to ensure resulting risks are appropriately identified and managed through controls such as underwriting standards and portfolio parameters.
- **Where is the institution on the risk versus reward continuum?** If the institution is willing to accept higher risk loans, pricing should sufficiently compensate for the additional risk.
- **As applicable, are the following items appropriately addressed:**
 - Portfolio quality and performance goals and projections?
 - Goals for loan growth and potential sources of new loans?
 - Growth outside the institution's territory and in capital markets activities?
 - Risk parameters and portfolio diversification goals?
 - Management of high risk products, customers, or industries?
 - Identification of target markets and industries?
 - New product and business line goals?
- **Do planning documents appropriately address changes in products and programs to meet changes in the institution's marketplace, demographics, and primary industry dynamics?** The board and management should establish business goals, risk tolerance levels, front-end guidance, and performance standards for each significant portfolio segment. The following are common segments that may apply:
 - Traditional/Full-time Farmers
 - Part-Time/Lifestyle Farmers
 - Commercial Farm Operations
 - Commercial Agribusinesses
 - Participation/Syndication Assets
 - Similar Entity Transactions
 - Out-of-Territory Loans
 - Scorecard Loans
 - Land-In-Transition Loans
 - Mission-Related Investments
- **Has the institution formulated contingency plans to identify alternative actions if the portfolio plan falters?** This is particularly important for institutions with higher risk portfolios and those projecting material growth or credit quality improvement.
- **Have key elements of the portfolio plan (e.g., credit quality improvement, key growth areas, etc.) been assigned to specific personnel?** Sufficient processes should exist to ensure accountability for plan implementation and results.

Staffing and Structure: As part of the planning process, management should assess staffing and organizational structure needs to accomplish portfolio goals and objectives and facilitate sound portfolio management. This includes ensuring the institution has an organizational structure that supports efficient and effective credit delivery, along with sufficient and capable staff to underwrite, service, and manage the loan portfolio. Evaluative questions and items to consider when examining an institution's assessment of its credit staffing and structure include:

- **Is the credit delivery structure (e.g., marketing, credit analysis, loan servicing, special assets, capital markets, risk management) appropriate relative to the size, complexity, and level of risk within the loan portfolio and in consideration of planned changes?** The structure should be logical considering the nature of the portfolio and its future direction. For example, as portfolios become larger and more complex, more specialized expertise is needed and increased separation of the marketing and credit functions would be common and beneficial.
- **Does the institution sufficiently assess staffing levels, composition, and expertise needed, and implement hiring and training programs to further develop staff expertise and improve operational efficiency?** Some portfolio segments require unique skill sets to properly analyze, structure, and service. The following list provides examples of conditions and portfolio segments that could impact staffing needs:
 - Expected growth or reduction in loan portfolio volume
 - Improving or deteriorating credit quality
 - Special assets requirements
 - New lending programs
 - Growth in agribusiness lending or purchased participations or syndications
 - Industry expertise in concentrated portfolio segments
 - New lending authorities (e.g., new title authorities)
 - Scorecard lending
 - Rural home lending
- **Are credit approval processes consistent with the nature of the portfolio and the expertise of staff?** The use of credit or loan committee approval requirements and delegated lending authorities may vary widely depending on these factors.
- **Are compensation and incentive programs consistent with the business plan and in proper balance with credit quality expectations?** Compensation and incentive plan criteria should be carefully crafted to strike an appropriate balance between portfolio growth, quality, and profitability objectives. Compensation programs should also consider other objectives, such as proactive loan servicing, sound credit administration, and timely risk identification. Coordinate with the evaluation of the Loan Underwriting and the Human Capital Management topics in reviewing how incentive compensation programs incorporate portfolio management objectives.

2. Monitoring, Analysis, & Reporting:

Evaluate the adequacy of ongoing portfolio monitoring, emerging risk analysis, and related reporting processes.

Guidance:

Institutions should have a robust surveillance system which provides the board and management with the information needed for sound credit risk oversight. All institutions should have core reporting systems that identify loan performance and quality for the entire portfolio and key portfolio segments. These systems should also include monitoring and reporting on the organization's credit risk profile in relation to business goals and objectives, progress in carrying out portfolio strategies, current portfolio conditions, and emerging risks.

Effective monitoring and reporting enable the board to better understand how well management is implementing the credit plan, which can be impacted by a myriad of factors. Adversity experienced by specific industries, internal and external environment threats, and growth opportunities (or lack thereof) are just a few of the issues that can challenge the organization in attaining credit goals. A primary objective of portfolio analysis is the ongoing detection and evaluation of internal and external risks and determining their impact on the loan portfolio. As the institution's size, complexity, and risk increase, the depth of risk monitoring and analysis should increase to ensure that all material risks are sufficiently considered. Clear, concise, and timely reporting of this information allows the board and management to adjust risk management strategies or redeploy resources, when needed, to increase the likelihood of the desired outcome.

Evaluative questions and items to consider when examining the sufficiency of an institution's portfolio monitoring, analysis, and reporting include:

- **Does management provide the board periodic reports on implementation of credit-related objectives and strategies from the credit plan and business plan?**
- **Does ongoing reporting compare portfolio performance to business plan projections and board-approved risk limits and portfolio parameters? If any portfolio parameters have been exceeded, were they appropriately handled (e.g., analysis of the cause, appropriate approvals, reporting to the board, etc.)?**
- **Does credit-related reporting provide meaningful information on primary portfolio segments (real estate, commercial, purchased participations and syndications, etc.), programs (scorecard lending, rural home, mission-related investments, etc.), off-balance sheet exposures (undisbursed commitments, serviced assets, etc.), concentrations, new loans, underwriting exceptions, etc.?** These analyses and exposures should generally be presented by risk rating, industry, and origination time frame, and should also reflect applicable trends. Reports should be accompanied by management's view of perceived risk in the various segments.
- **Does management use regular reporting, periodic analyses, and other methods (attendance at credit conferences, newsletters, bank meetings, economic forums, etc.) to identify emerging risk areas?** For those emerging risk areas that are significant, the analysis and reporting should be expanded to include applicable enterprise analysis and industry studies (e.g., impact of local, regional, and national economic trends; changes to government programs for key commodities; distressed industries). These analyses should include an economic assessment and reflect the institution's risk exposure, trends, and management plans to proactively mitigate risks.
- **Does portfolio analysis and reporting consider the impact of unique loan participation purchase or sale programs, as applicable?** For example, several FCS banks have set up participation pool programs with affiliated associations, as discussed in the Managing Risk Concentrations topic. Due to the complexities and varied impact of these programs on portfolio risk, it is appropriate to measure and analyze risk exposures in a dual fashion (i.e., both with and without applicable program volume). If a bank or association's sole method of analyzing its portfolio is to exclude this volume, the institution may not be fully recognizing its concentration risk exposure.

- **Is credit-related reporting to the board and senior management presented in a logical and clear manner?** Reports should be easy to understand and interpret, while providing meaningful and complete information (e.g., in many cases, the reports should address both outstanding volume and total commitment to fully recognize potential risk exposure).
- **Is the credit analysis and reporting structure designed to involve staff that are independent from the business development function to better ensure an objective view of portfolio risk?**
- **Is the frequency of reporting appropriate for the portfolio and lending environment?** Critical portfolio information (such as portfolio quality and performance) should be reported to the board at least quarterly, while less frequent reporting may be appropriate for other areas.

Refer to the Agency’s [LPM Publication](#) (Monitoring and Evaluation sections on pages 17-19) for additional background and information.

Note: Items related to portfolio monitoring, analysis, and reporting are also covered in the Portfolio Quality & Composition topic, the other LPM topics, and the Stress Testing group of procedures later in this topic. Examiners should coordinate, as needed, when examining these related items.

3. Information Systems & Data:

Determine if information systems and data integrity allow for reliable and effective risk monitoring, analysis, and reporting.

Guidance:

A sound credit-related management information system (MIS) is critical for ensuring reliable and effective risk monitoring, analysis, and reporting. An effective MIS encompasses the collective processes used to capture, transmit, store, retrieve, manipulate, and display the information needed in decision-making processes. The technology aspect of this may be internally managed or provided by a district bank or other service provider, but in most institutions will involve a combination of sources. While the process used may vary, the system must ultimately provide sufficient data, information, and reports to identify and monitor all primary credit risks.

The MIS must have the capacity to provide timely information on the condition, segmentation, quality, and performance of the loan portfolio. A critical component of this is individual loan data. If an institution lacks accurate and complete loan data, the ability to effectively manage and report on the loan portfolio is compromised. Consequently, a dynamic data verification process that focuses on completeness and accuracy of loan information is a necessity.

Evaluative questions and items to consider when examining the adequacy of credit-related information systems and data integrity include:

- **Is adequate information available to conduct portfolio analyses and facilitate management and board reporting?** Timely, accurate, and sufficiently detailed information must be available to facilitate clear and effective reporting. This would typically require adequate information in the following areas:
 - Uniform Classification System, performance status, and past due status
 - Risk rating stratification, trends, and migration

- Loan commitments, including type, amount, and level of usage
 - Loan yield and profitability data (asset segment and portfolio levels)
 - Loan type, maturity, payment frequency, and conditions
 - Loan covenant compliance and defaults
 - Exceptions to policy, underwriting, and documentation standards
 - Sources of loans (e.g., originated, purchased, etc.)
 - Credit enhancements (USDA, Farmer Mac, etc.)
 - Off-balance-sheet credit risk exposures
- **Does the MIS provide sufficient detail and information about individual loan transactions, portfolio segments, and the entire portfolio?** The MIS should be capable of generating reports in multiple ways and at multiple levels to meet the needs of the various users (e.g., board, management, staff, etc.).
 - **Are any computer models used in credit-related analysis and reporting validated in accordance with the institution's model validation policy?** FCA's Informational Memorandum relating to [Computer-Based Model Validation Expectations](#) dated June 17, 2002, provides direction to ensure models or applications generate accurate information, and also instructs the board and management to implement a model validation policy.
 - **Does the institution evidence a commitment to maintaining data integrity and have adequate processes and controls to validate the reliability of data in the MIS on an ongoing basis?**
 - **Has management considered and evaluated MIS capabilities to perform stress testing with loan specific data? Do systems have the ability to roll up results into portfolio-level reports to assess the impact of various scenarios?** Additional questions regarding data adequacy and stress testing capabilities are covered in the Stress Testing procedures group below.
 - **Are technology resources, and in particular reporting software and tools, sufficient for generating the necessary analyses and reports? Can management design its own reports, and can reports be developed quickly to respond to a specific need?**
 - **Does the institution comply with the requirements of FCA Regulation [621.15\(a\)](#) on preparing and submitting reports of accounts and exposures?** The reports must be accurate, complete, timely, and prepared in accordance with FCA instructions. In addition, the institution must provide a written certification to the Reporting Entity (the Federal Farm Credit Banks Funding Corporation) and respond to questions from the Reporting Entity. The Reporting Entity maintains the certifications for FCA's review, so the institution does not file certifications directly with FCA. However, the institution should retain a copy. The regulation also requires the institution to develop, implement, and maintain an effective system of internal controls over the data. Examiners should evaluate the adequacy of these controls as part of examination work in the *Information Technology – Security* topic.

Refer to the Agency's [LPM Publication](#) (MIS section on pages 16-17) for additional background and information.

4. Audit:

Determine if the institution conducts an effective audit (scope, reporting, and followup) of the portfolio planning and analysis functions.

Guidance:

The internal audit and review program is a key mechanism for ensuring the institution's portfolio planning and analysis processes are functioning effectively. This is especially important for providing the board a reasonable level of assurance that credit-related reporting is complete and reliable. Without accurate reporting, credit risk might go undetected and exceed board-established tolerance levels, to the point where the institution's condition is materially affected. More commonly, unreliable reports cause the board and management to miss opportunities to adjust risk management strategies in a timely manner and avoid a material increase in credit risk. The potential impact of unreliable reporting supports the need for strong detective controls in the form of audit coverage.

Evaluative questions and items to consider when examining the audit and review function regarding portfolio planning and analysis include:

- **Audit Coverage: Is there periodic audit or review coverage of portfolio planning, analysis, and reporting processes and related data integrity?** Audit or review coverage and frequency should be appropriate relative to risks, changes in the operating environment, and periodic testing needs. Coverage should also be consistent with the institution's risk assessment results and annual audit plan.
- **Scope and Depth: Are audit or review scope and depth sufficient to conclude on the adequacy, completeness, and timeliness of portfolio planning, analysis, and reporting?** The scope should cover key processes and controls within the area being audited or reviewed. The depth of work should be sufficient to determine if internal controls are functioning as intended and regulatory requirements are met. The scope and depth of coverage should be consistent with the approved audit or review plan and engagement contract (if applicable). If audit or review work deviated materially from the original planned scope, the board (or Audit Committee, if so delegated) should be notified of the reasons for the change. Specific items that should be considered in the audit or review scope include:
 - Portfolio planning, including a business needs assessment and resulting goals and strategies.
 - Loan portfolio stress testing processes.
 - Credit-related data integrity, including a combination of individual loan review and evaluation of related processes and controls.
 - Board reporting systems for monitoring portfolio risk, conditions, and trends, as well as the effectiveness of portfolio strategies.
 - Model validation and compliance with the model validation policy for all significant portfolio planning and analysis models, consistent with guidance in FCA's Informational Memorandum on [Computer-Based Model Validation Expectations](#) dated June 17, 2002. Audits are especially important when models are revised or replaced.

- Fraud-related threats and vulnerabilities, as well as anti-fraud controls.
- **Reliability of results: Did FCA identify any concerns with audit and review reliability?** Evaluate the reliability of internal audit or review work by comparing the results to FCA's examination results in this area. This comparison often includes FCA testing of transactions that were covered in the internal audit or review (transactions are often loans or loan applications, but may include other types of transactional activity, as well). In addition to the audit or review report, examiners should request and review the workpapers and hold discussions with the auditor to obtain a more thorough understanding of work completed. Often, auditors and reviewers will complete line sheets, flowcharts, control matrices, standard work programs, workpaper forms, or other relevant documents when conducting work. Workpapers should adequately document the work performed and support the final report. In addition, any proforma work programs, workpapers, or other tools should be accurate and sufficiently thorough. If there are material weaknesses identified by examiners that are not identified by internal audits or reviews, examiners should assess the underlying reasons.
- **Reports: Do internal audit reports sufficiently communicate portfolio planning, analysis, and reporting review results and recommendations, if applicable?** Examiners should consider the following when evaluating the audit or review report:
 - Is the report prepared in accordance with the institution's guidelines?
 - Is an executive summary or overview included to provide the board with a general conclusion on audit or review results?
 - Is the report accurate, concise, supported, and timely in communicating the audit or review objectives, scope, results, conclusions, and recommendations?
 - Are conclusions and recommendations realistic and reasonable given the institution's size and complexity, with material and higher risk issues clearly identified and prioritized?
 - Are conclusions and recommendations supported by convincing evidence and persuasive arguments (condition, criteria, cause, and effect)?
 - Does the report conclude whether the institution adheres to policies, procedures, and applicable laws or regulations, and whether operating processes and internal controls are effective?
 - Does the report address potential vulnerabilities to fraud, if applicable?
- **Corrective Action: Are management responses to audit findings in this area reasonable, complete, and timely? Have corrective actions been effective?** Audits and reviews are only effective if corrective action is taken to remedy the weaknesses identified. As such, there should be a reasonable, complete, and timely management response to the audit or review report. In some cases, management commitments and agreements or any areas of disagreement are documented in the report or in a separate memo or tracking system. If corrective actions are not resolving the issues or concerns (based on repetitive audit findings, FCA findings, etc.), examiners should further investigate the reasons. For example, this could indicate the audit or review did not sufficiently identify the underlying causes or

materiality of weaknesses, sufficient resources are not being directed toward corrective actions, or weaknesses exist in the institution's corrective action process, including board oversight of the process.

Examination Procedures and Guidance

Loan Portfolio Stress Testing

1. Direction & Involvement:

Determine the adequacy of loan portfolio stress testing policy and procedure direction and board and senior management involvement in the stress testing process.

Guidance:

Direction on stress testing should start at the board level with expectations defined in board policy. Board policy direction should be supplemented with procedures established by management. Collectively, policies and procedures should address the frequency of stress testing, its role in the business planning process, and how the stress testing program is integrated into risk management activities. Policies and procedures should also specify a clear and central role for the board and senior management.

Board members should have the opportunity to provide high level front-end input into stress testing by identifying areas of the portfolio or economic factors that are of particular interest or potential concern, thereby warranting coverage in stress testing work. Also, the board should receive and review results via the reporting process. Senior management should be further involved by performing or overseeing stress testing work, formulating conclusions, and developing and implementing resulting responses and recommendations.

Evaluative questions and items to consider include:

- **Does the institution have board policy direction on stress testing that adequately communicates the board's stress testing expectations (can be a separate policy or part of broader policy direction)?**
- **Has management established stress testing procedures to implement board policy direction?**
- **When viewed collectively, do policies and procedures address key items such as:**
 - Frequency of stress testing?
 - Role of stress testing in the business planning process?
 - How stress testing is integrated into the institution's risk management process?
 - The roles of senior management and the board in the stress testing process?
- **Is the level of board and senior management involvement in the stress testing process reasonable?**

2. Model(s) Used:

Evaluate the stress testing model(s) used and the underlying logic/technique employed by the model(s) to determine if the sophistication and capability are commensurate with the complexity of the institution's portfolio, and if model testing/validation has been completed.

Guidance:

FCA is not dictating the stress testing model, the underlying model methodologies, or process to be employed. Each institution should have a stress testing process that provides the institution with information to make better risk management decisions in critical areas such as business planning, setting its risk appetite, modifying underwriting practices, and pricing loans to cover risk. The models and processes used to conduct stress testing could vary from sophisticated, data intensive, vendor-supplied models, to internally-developed spreadsheets. In some cases, the institution may rely on multiple models and analytical tools to conduct different facets of its stress testing work. The underlying methodologies used by the institution to make projections warrant examiner scrutiny and, at times, may justify criticism if the models are judged too simplistic for the complexity of the institution's loan portfolio. However, institutions that use sophisticated models but do not effectively use the results in risk management processes are also a concern.

Stress testing models will differ in terms of the underlying methodologies that drive the models. For example, to project credit quality, some models may apply stressors to a customer portfolio with simulated borrower financial information. If this is constructed properly under an appropriate control framework, it can reasonably resemble the actual portfolio. Some models will consider and directly use actual customer financial information, and when stressors are applied the resulting effects to credit quality of individual customers and the portfolio as a whole are projected. Other models may not involve stressing simulated or actual customer financials. Instead, these models and processes rely more on identifying stressors and carefully making assumptions on how these stressors will affect the Probability of Default (PD) and Loss Given Default (LGD) ratings for certain customers, portfolio segments, and the portfolio as a whole.

FCA believes models utilizing actual borrower information are preferable, followed by models using simulated borrower financial information. Models relying on PD/LGD migrations are often less functional because they may lack the ability to analyze the impact of specific stressors on the borrower's financial condition. Borrower level financial statement stress testing can improve the depth and comprehensiveness of stress testing activities and result in less subjectivity being needed to project results. Nevertheless, PD/LGD migration models are recognized as a viable alternative to borrower level financial statement stress testing if supported by adequate documentation, analysis, and controls.

When PD/LGD migration models are used, the institution must have adequate documentation and supporting analysis in place to clearly and reliably illustrate the effect of identified stressors on PD and LGD ratings. Institutions should support PD/LGD migrations in part with analysis that draws upon current borrower financial characteristics and historical portfolio performance during past periods of stress. In general, the documentation and supporting analysis expectations are higher when migration models are used for stress testing as these processes are inherently more subjective and require greater use of judgment. Institutions using PD/LGD migration stress testing should also be encouraged to consider borrower level financial statement stress testing, at least on the institution's largest loan exposures. Regardless of the type of model used, underlying documentation should lay out a set of economic and industry stressors that will drive the change in portfolio conditions and include adequate supporting analysis as to why resulting credit quality is a likely or potential outcome.

On certain segments of the portfolio, such as scorecard, housing, and smaller agricultural loans, it may not be feasible or cost effective to gather current financial information or construct simulated borrower financial statements. As a result, typical borrower-level stress testing work is not

practical. An institution should have other processes in place to perform stress testing on these portfolio segments. The sophistication and comprehensiveness of stress testing in these portfolio segments should be commensurate with how significant these segments are to the institution.

Evaluative questions and items to consider when evaluating an institution's model(s) include:

- **Does the institution use a single model or series of models/applications to accomplish its stress testing work?** Identify the models and applications, as appropriate, and indicate which are internally-developed versus purchased from a vendor.
- **If the institution is using multiple models/applications, does it integrate the output into an internally-consistent, consolidated set of stress testing results?**
- **Does the institution's stress testing model/process provide projections that show the effect of stress on borrower quality (i.e., PD ratings) and collateral-related considerations (i.e., LGD ratings)?**
- **Does the institution's model/process allow risk to be measured with adequate granularity (i.e., illustrate changes in PD and LGD ratings) versus simply showing migrations in UCS classifications?**
- **What is the underlying, fundamental logic/methodology employed by the institution's stress testing model(s)?** As noted above, the most common models involve either stress testing with simulated customer financials, stress testing with actual customer financials, or stress testing using assumed PD/LGD migrations. Identify management's rationale for the type of model(s) used.
- **If the institution is utilizing a model/methodology that is based primarily on PD/LGD migrations, are projected migrations sufficiently supported by underlying documentation and analysis?** The supporting analysis should consider factors such as the underlying financial condition of borrowers and historical performance in past periods of stress. In addition, supporting documentation and analysis should sufficiently explain and support why the projected PD/LGD migrations are an expected outcome to identified stressors.
- **Does the model and stress testing process appropriately address portfolio segments where typical borrower-level stress testing is not feasible (e.g., housing loans, scorecard loans, small agricultural loans, etc.)?**
- **With the model(s) used, can the institution apply multiple shocks simultaneously and reflect the corresponding effects on PDs, LGDs, and the institution's financial condition and performance?**
- **Can the model(s) used be tailored to the institution's portfolio and major risk factors, and are the functionality and adaptability of the models high enough to allow stress testing practices to be responsive to changes in portfolio conditions and potential risk?**
- **Has the institution performed validation work on its stress testing model(s) consistent with guidance in FCA's Informational Memorandum [Computer-Based Model Validation Expectations](#) dated June 17, 2002?**
 - In the event the institution has just developed or started using its stress testing model, determine if the institution has plans in place to validate its model when

appropriate.

- If an institution is using a credible vendor supplied model for stress testing, FCA's assessment of model validation efforts should focus on determining if reasonable efforts have been made to audit the accuracy of information entered into the model (i.e., is model input accurate and does model input agree with data in the general ledger, other data systems, and supporting assumptions).
- If an institution is using an internally-developed model, FCA's assessment of validation efforts should also address items such as 1) determining if adequate change controls are in place to ensure significant revisions to the model are tracked and monitored by users and developers and approved by an independent party, and 2) evaluating if assessments have been performed, independent of model construction and maintenance, to determine if results from the model are logical and consistent with assumptions.
- Examiners should also be cognizant that over time, all institutions should utilize opportunities to "back test" stress testing models. For example, if some of an institution's stress testing assumptions materialize, actual results should be compared against model output to evaluate the accuracy of the model and to identify ways to improve the model's reliability in forecasting results. Examiners, however, must recognize this model validation work is long-term in nature, likely requiring many years to complete.

3. Data Sufficiency:

Determine if the institution's data is of sufficient depth and integrity to promote a reliable stress testing program.

Guidance:

Stress testing results are only as good as the underlying data used to conduct the analysis. Evaluative questions and items to consider when evaluating an institution's stress testing-related data include:

- **If the institution is using simulated customers/simulated customer data, have appropriate steps been taken to ensure (and test) that the simulated portfolio resembles the actual portfolio?**
- **If the institution is using actual customer data, does enough of the portfolio have current and complete data to allow for meaningful stress testing? Also, are there any material problems or limitations associated with borrower financial information in the institution's database?** Question management and review database information to determine what portion of the portfolio by volume has reasonably current (i.e., 3 years old or less) balance sheet and income information. Also, evaluate if financial information used for stress testing is consistent in terms of presentation (e.g., market value versus GAAP/cost basis balance sheet information, post-closing or pre-closing financial statements, borrower-supplied versus institution-adjusted financial positions, accrual or cash income information, average earnings or the last year's only, etc.). Determine through management discussions and past internal credit review activities if overall data integrity is reasonable (i.e., when financial information is in the database is it sufficiently accurate). Also, does the portfolio of customers with current and complete data used for stress testing resemble the actual

portfolio in terms of industry concentrations? Are data concerns adequately considered when interpreting stress testing results?

- **Has the institution appropriately recognized data concerns in its decision on whether to use simulated or actual customer data?** If an institution uses actual customer data but lacks current, complete, and consistent data on a significant portion of its portfolio, or other limitations exist with customer financial information in the institution's database, the institution may be better suited to use simulated data.
- **Are there any concerns with the accuracy of the institution's assigned PD and LGD ratings, which in turn could affect the accuracy and usefulness of stress testing?**
- **In addition to simulated or actual customer data and assigned PD and LGD ratings, are there any other major input items that exist for the stress testing model (such as collateral values)?** Assess the integrity of this other data and input that feeds the stress testing model.

4. Content, Assumptions, & Frequency:

Determine whether stress testing assumptions are logical, well thought out, cover the institution's key risks, and are appropriately documented. Also, ensure that stress testing is being conducted with sufficient frequency and includes a severe yet plausible scenario.

Guidance:

Institutions are expected to evaluate meaningful stress scenarios that address assumptions related to a range of factors based on the composition of the institution's portfolio. Also, the frequency of stress testing should be commensurate with risk levels and conditions, but should be completed at least annually. Evaluative questions and items to consider include:

- **Does stress testing address major industry concentrations?**
- **Is the degree of shock tailored, as warranted, to the specific industry, type of loan (commercial versus mortgage), and expected economic conditions?**
- **Are the stressors applied in a logical and consistent fashion?** For example, if declining grain prices are assumed does the stress testing analysis also assume lower feed costs for livestock producers?
- **Are stress testing scenarios well developed and well thought out? Does underlying documentation for each stress scenario adequately describe the underlying economic and financial environment? Do stress testing assumptions and analysis address key risk factors affecting the institution and are assumptions relating to these risk factors logical and adequately documented?** Key risk factors will vary by institution but may include:
 - Commodity prices
 - Demand for farm products
 - Input costs
 - Production expectations
 - Farmland and other collateral values, particularly specialty collateral values
 - Interest rates and spreads (including effects of changing interest rates on capitalization rates and real estate values)
 - Funding costs
 - Patronage paid to shareholders and patronage received from the funding bank

- Off-farm income
 - State of the general economy and overall macroeconomic factors (e.g., unemployment and inflation rates, contracting or expanding economy, etc.)
 - Counterparty concentrations
 - Unfunded commitment exposure and subsequent utilization
 - Government policies and programs relating to agriculture
 - Volume and growth trends (stress testing should not assume volume will remain static)
- **Does the institution’s stress testing work include at least one severe yet plausible scenario?** In making this determination consider:
 - Whether multiple industries, including the institution’s largest concentrations, were stressed.
 - If stress was applied for a prolonged period of time.
 - Whether collateral values and borrower financial positions were assumed to have deteriorated significantly.
 - How the stress scenario compares in magnitude to past time periods of actual stress.
 - If there was a sufficient degree of thoughtfulness and creativity employed in devising the scenario, or did the scenario simply reflect conditions that occurred in the past.

Note: It is important to recognize that a severe yet plausible scenario should not be viewed as an event that is likely to occur anytime in the near future. Institutions should perform “most likely” or “baseline” stress testing scenarios to analyze the effects of expected economic conditions moving forward. A severe yet plausible scenario should be analyzed to gain insight into an institution’s risk-bearing ability in a situation of extreme and rapidly escalating stress, even if chances of the scenario occurring are remote. Also, the time frames as to when the stress may occur or the probability of the stress occurring should not be the primary focus of that analysis. Institutions should not let the time frames utilized by their stress testing models deter efforts to model severe yet plausible scenarios. Many stress testing models are designed to model conditions and performance over the next 3 years. The institution may adamantly believe the severe yet plausible scenario will not occur in the next 3 years. As a result, there may be reluctance to model this scenario. However, the scenario can and should still be modeled, whether tied to the next 3 years or some other time frame.

- **At least annually, does the institution complete a comprehensive stress testing analysis that shows the effect of stress scenarios over a 3-year horizon on:**
 - Credit quality, including risk ratings (PDs and LGDs), nonperforming, and nonaccrual loans?
 - Provision for loan losses and allowance for loan losses?
 - Capital and capital ratios?
 - Earnings and earnings ratios?
 - Liquidity measures (including effects on GFAs and bank CIPA scores)?
- **In addition to annual comprehensive stress testing, are ad hoc or targeted stress tests performed, as warranted, to address specific risk areas that may be of concern, such as large loan concentrations, specialized or distressed industries, loans originated under non-traditional credit delivery systems, etc.?**

- **Is the overall frequency of stress testing activities adjusted, as warranted, based on portfolio and economic conditions?** The frequency of stress testing should be reasonable in relation to the size and complexity of the portfolio and underlying portfolio conditions.
- **Is the overall depth and breadth of the institution's stress testing work commensurate with the size and complexity of the institution's portfolio and underlying portfolio conditions?**

For banks, refer to Question 6 in [Stress Testing Frequently Asked Questions \(FAQs\)](#) and the [Stress Testing Best Practices as of August 23, 2010](#) documents for additional guidance on content, assumptions, and frequency.

5. Integration With Financial Systems:

Determine if the stress testing process is adequately linked to, and integrated with, financial systems to project the results of portfolio stress onto the institution's financial condition and performance.

Guidance:

A critical element in all stress testing programs is linkage to and integration with the institution's financial systems. In order for stress testing to facilitate better risk management decisions, an institution's annual comprehensive stress testing must go beyond credit quality projections and show the effect of stress scenarios on financial condition and performance.

When the stress testing is ad hoc or targeted in nature, such as testing a specific distressed industry or stressing borrowing bases, it is reasonable that these stress testing results may not flow through to an institution's financial statements. However, an institution's annual comprehensive stress testing activity should feature integration with financial systems.

Evaluative questions and items to consider include:

- **Does the institution's stress testing process include the capability to take results from stress testing portfolio quality and project the effects on key financial metrics, such as:**
 - Allowance for loan loss provisions and the allowance for loan losses?
 - Capital and capital ratios?
 - Earnings and earnings ratios?
 - Liquidity and liquidity measures (including effects on funding costs)?
- **Is the institution's stress testing model/process integrated with its economic capital model?** As applicable, describe how the stress testing model/process and economic capital model are integrated and interrelated.
- **Assess the overall reasonableness of the process and systems used to project the effects of portfolio stress onto the institution's financial condition and performance.** Points to consider include whether the process for projecting financial results is performed by some type of vendor or internally-developed model, or is more manual and judgment-based, relying heavily on numerous management assumptions.

6. Reporting Results:

Review the report for the most recent comprehensive stress test and conclude on the adequacy of the institution's stress testing reporting practices.

Guidance:

Stress testing programs are not complete without an effective reporting process. Given the inherent complexity of the stress testing process, reports should include narrative comments that "bring it all together" for senior management and the board. Reports should tell what was done, why it was done, what were the key assumptions and results, what it means for the institution, and include recommendations on how the institution should react. The frequency and level of detail in stress testing reports may differ for the board and management. However, at a minimum, a report on the annual comprehensive stress testing activity should be provided to and discussed with the board.

Evaluative questions and items to consider when evaluating an institution's stress testing reporting include:

- **Was a narrative-based report on the comprehensive stress testing activity prepared for, reviewed by, and discussed with the board?**
- **Did the report address key items such as:**
 - The scope of work performed?
 - Why certain stressors were selected and applied?
 - Key assumptions?
 - The effects on the institution's credit quality and its financial condition and performance?
 - Whether the institution is unduly vulnerable to certain risk exposures?
 - Recommended actions the institution should take?
 - What contingency plans will be utilized if the stress scenario unfolds?
- **If not done as part of answering the preceding bullet points, summarize the institution's most recent comprehensive stress testing activity. What were the key assumptions and stressors that were applied, the resulting effect on credit quality and the institution's financial condition and performance, and recommendations formulated as a result of the stress testing activity?** Review supporting information, schedules, tables, etc., used to prepare the report, as necessary, to fully evaluate and understand the stress testing results.

7. Using Results:

Evaluate and conclude on efforts to incorporate stress testing results into business planning and risk management processes.

Guidance:

After stress tests are performed and the results are reported, the final step is to utilize the information. Examiners should assess how stress testing information and results were used by the institution in its planning efforts and risk management activities. Possible uses include setting or adjusting portfolio parameters, modifying underwriting practices and standards, revising capital goals, and changing loan pricing practices. At times, stress testing work may serve to validate that existing risk management practices are appropriate and should be continued. Furthermore, the results of the annual comprehensive stress testing activity and highlights from the comprehensive

annual stress testing report should be incorporated into the institution's business plan (starting with 2011 business plans).

Evaluative questions and items to consider when evaluating how the institution utilizes its stress testing results include:

- **How has the institution integrated results from stress testing work into the business plan and planning process?** Possible methods could involve including:
 - A business plan section on stress testing and identifying corresponding business plan strategies or contingency plans formulated as a result of stress testing work.
 - “Most likely” scenarios in the business plan that were formulated via stress testing work.
 - The severe yet plausible scenario in the business plan as a “worst case” forecast, along with contingency plans that will be implemented if the stress scenario unfolds.
- **Does the most recent business plan differ from the prior business plan in terms of how stress testing is addressed or reflected?**
- **Do recommendations from the institution's stress testing reports represent specific, actionable items that will influence execution of the institution's risk management activities?** Through discussions, gather feedback from management on how stress testing results are utilized in risk management activities.
- **Is there evidence that stress testing results have been used to set, validate, or change items such as:**
 - Portfolio parameters?
 - Underwriting standards and practices?
 - Use of FSA, USDA, Farmer Mac, and other guarantees?
 - Capital levels and capital goals?
 - Loan pricing practices?
 - Business plan goals and strategies?
 - Human resource needs?